Neighborhood Assessment Program Work Plan

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Overview

This document presents a work plan that the Air Resources Board (ARB) staff proposes to use to develop guidelines for evaluating and strategies for reducing air pollution impacts at the neighborhood-scale. The effort will include criteria and toxic air pollutant impacts in communities affected by multiple emission sources. We are calling this effort the Neighborhood Assessment Program (NAP) and have provided this work plan to inform the public and interested stakeholders about our efforts.

The ARB, air pollution control and air quality management districts (air districts), environmental groups, community activists, affected industries, and others will be able to use the NAP guidelines to support consistent, uniform, and science-based evaluations of neighborhood air pollution impacts and reduction strategies. We believe that it is through such an approach that local decision-makers can most effectively address neighborhood-scale air pollution issues.

Background

Representatives from some communities and environmental groups have for sometime maintained that minority communities and communities of lower economic status are more impacted by environmental pollution than other communities. They argue that current regulatory protocols continue to promote disproportionate impacts by allowing greater air pollution exposures in some communities compared to others, and that government agencies must pay attention to environmental equity (in terms of health protection) when drafting regulations. There is growing acceptance for this argument by many public interest groups, but no clear guidance exists as to how to assess air pollution impacts at the neighborhood-scale.

Efforts are underway to address this issue at local, state, and federal levels. Pursuant to the President's Executive Order, the U.S. Environmental Protection Agency (U.S. EPA) has recently set up an environmental justice (EJ) Program. One effort at the local level that has gained wide recognition is the South Coast Air Quality Management District's (SCAQMD) 10-point EJ initiative. As part of this effort, SCAQMD and ARB conducted the Multiple Air Toxics Exposure Study II (MATES II) with a final report released in March 2000. MATES II was a community oriented monitoring, analysis, and modeling study specifically targeting residential areas which could be influenced by nearby sources of toxic emissions. At the state level, Governor Davis signed the Senate Bill 115 (Solis, 1999). This bill requires the California Environmental Protection Agency (Cal/EPA) to develop an EJ mission statement by January 1, 2001. In the bill, EJ is defined as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."

In recent months, various stakeholders have approached Dr. Alan Lloyd, the ARB Chairman, to discuss the options available for reducing impacts in a community adversely affected by multiple emission sources. Additionally, ARB staff, after reviewing the state's air toxics program, recommended that the state's program be enhanced by conducting cumulative impact evaluations (mobile, stationary and area sources).

Staff also recognizes that scientific limitations as well as the lack of definitive legal mandates have constrained the assessment of impacts of multiple emissions sources on a receptor-site within a community. From an air quality perspective, evaluating EJ issues and identifying differences in impacts among communities will require determining cumulative exposures, which is a technically difficult task. Subsequently, the exposure data would be used to project potential health impacts at the neighborhood-scale as well as explore risk reduction strategies.

Within this context, Dr. Lloyd directed his Community Health Advisor to evaluate the issue of neighborhood impacts and to prepare a work plan for addressing it. The Chairman also directed his staff to meet with stakeholders to discuss and gather their views, opinions, and recommendations. Accordingly, staff from the Chairman's Office met with over 20 outside individuals in addition to key ARB management and staff. Based on these discussions, staff from the Office of Community Health recommended that the establishment of an internal ARB work group would be a useful first step. This work plan reflects the input of the work group and is based on the following principles:

* The program should lead to the development of guidelines for performing a receptor-based air pollution impact assessment that addresses both criteria and toxic pollutants by summer 2002.

* The program should receive high priority, and should, wherever possible, rely on ongoing and planned ARB programs to save resources.

* The program should build on the existing state air toxics data and programs, the MATES II analyses, and the ongoing Barrio Logan monitoring and evaluation efforts.

* Public/stakeholder participation should be provided at appropriate stages of the program development process.

While the primary focus of the work plan is to develop assessment tools, by necessity, selected risk reduction related tasks have been included to address high-exposure or high-risk situations. In this regard, if staff encounter a high-risk situation during NAP-related air quality monitoring and modeling efforts, appropriate action will be taken, in consultation with the local air district and stakeholder groups. Staff will work within the existing regulatory structure to develop near-term solutions to any high-risk situation encountered.

Although the critical first step of the work plan is the development of assessment tools, staff believes that it is equally important to begin exploring long-term policy options as soon as possible. This is a difficult task and will require input from various stakeholders. Thus, the plan includes the establishment of a stakeholders group to begin this work. Ideally, a consensus can be reached on the mechanism for incorporating cumulative impact assessments into the decision making process in the same time frame that the assessment tools are developed.

Work Plan

1. Program Development

Objective: To develop and coordinate the Neighborhood Assessment Program (NAP) within ARB, to investigate whether or not cumulative air pollution impacts differ between neighborhoods within a designated region. The program will focus on developing guidelines for ARB and other stakeholders to use to evaluate cumulative impacts in a neighborhood. The primary outputs of this element are the work plan, recommendations for the future program, and periodic status reports on NAP and related issues to the Chairman and the Board. It is likely that a tiered risk assessment approach, with one or more levels of refined assessments, may be needed to characterize cumulative risks.

Tasks:

a) **Work Group**: An internal ARB work group with expertise in several disciplines has been convened. Depending on need, the group may be expanded to include other stakeholders and/or experts.

b) **Evaluate Existing Programs**: Evaluate existing programs and policies, and hold meetings with selected external entities (e.g., South Coast AQMD, Bay Area AQMD, U.S. EPA, EJ advocates, industry representatives, and other stakeholders) to share information and perspectives on community health issues and initiatives to address them. Invite experts to speak to the work group.

c) **Program Coordination**: Develop the work plan and hold regular meetings with the work group to discuss NAP status and to decide on future actions and plan modifications, if necessary. Coordinate NAP activities with related ARB programs, specifically the toxics program, the implementation of Senate Bill 25 (Escutia, 1999), and Senate Bill 115 (Solis, 1999). Report periodically on program status and direction, and implementation to the Chairman.

d) **Environmental Justice Mission Statement**: Assist Cal/EPA in developing and implementing programs required by Senate Bill 115 (Solis, 1999).

e) **Communication Plan**: Develop and implement a communication plan to inform stakeholders and to solicit their input on the assessment methodologies and test results. Coordinate with Cal/EPA to ensure that the NAP complements and supports related activities in Cal/EPA.

2. Cumulative-Impact Assessment Methodology

Objective: To develop source-receptor-based, cumulative-impact/risk assessment methodologies suitable for evaluating neighborhood-scale air pollution impacts from all nearby sources, including mobile sources, for comparing neighborhood-scale exposures within a region. With these methodologies, local decision-makers can then assess policy options for addressing neighborhood-scale environmental concerns. While recognizing that cumulative impacts will ultimately require multimedia effects evaluation, this effort would focus only on the air pathway.

Tasks:

a) **Identify Data and Methodology Gaps**: Perform a literature survey to compile information on existing cumulative impact assessment methodologies and databases, including air dispersion models, total exposure and risk assessment models, emission inventories, and meteorological data. Identify the uncertainties associated with the methodologies and databases. Identify gaps in data and methodology, and determine the need for additional monitoring data, emission inventories, meteorological data, model development, and reconciliation of monitoring data and inventory estimates.

b) **Dispersion and Impact Assessment Model Development**: Develop and refine the models, as needed, based on the methodology gaps identified in task 2(b) and following the pilot and supplemental assessments made in tasks 3 and 4.

c) **Evaluate Methodologies and Protocols**: Evaluate the performance of protocols and methodologies applied in tasks 3 and 4 (i.e., an initial evaluation after the Barrio Logan Pilot and a second after the monitoring in supplemental test neighborhood studies) with respect to the monitoring, emission inventory, and/or health risk assessment data sets collected.

d) **Work Cooperatively with the Office of Environmental Health Hazard Assessment (OEHHA)**: Enlist OEHHA's expertise and guidance in developing a risk assessment and numerical index of neighborhood-scale cumulative risk, that includes the combined effects of criteria and toxic air pollution at the neighborhood-scale.

e) **Peer Review**: Upon completion, all newly developed models and methods will be subject to a peer review process as routinely followed by the ARB.

3. Barrio Logan Pilot Study

Objective: To perform a pilot study at Barrio Logan to develop an understanding of cumulative exposures and the mechanics of conducting neighborhood-scale monitoring and impact evaluations. The primary products would be air quality and emission inventory data sets, exposure/risk assessments for Barrio Logan, additional empirical data, and field experience.

***Tasks*:**

a) Coordination and Risk Communication: Continue working with the existing Barrio Logan stakeholder group. Expand the stakeholder group membership to ensure that those affected (e.g., neighborhood residents, air districts, local businesses, etc.) are:

* included in the process,
* informed of which assessment tools will be applied,
* notified about the results of the air quality and health evaluations,
* told what the results mean in terms of health impacts, and
* informed about how the results compare to the region and other areas.

b) Monitoring: The Barrio Logan monitoring was completed in spring 2000.

c) Emission Inventory Development: Develop a neighborhood-scale, GIS-based emission inventory by reviewing all available emission source data, determining compliance of sources within the test region, and conducting visual inspections to identify uninventoried sources.

d) Data Analysis and Impacts Evaluation: Using the models identified and developed under task 2, attempt to develop concentration/risk isopleths for the neighborhood to compare with other neighborhoods in the region and with the average cumulative risk for the region. Consult with OEHHA, as necessary, to develop risk estimates/isopleths based on the monitoring data and modeled concentrations.

4. Supplemental Neighborhood Monitoring and Impacts Evaluations

Objective: To refine the methodologies developed under task 3 by a second phase of neighborhood testing in two additional areas of the state.

Tasks:

a) **Develop Neighborhood Assessment Criteria**: Develop criteria, based on monitoring, emissions inventory, meteorological analyses, and a review of relevant regulatory rules, practices, and policies for assessing air pollution impacts at the neighborhood-scale.

b) **Neighborhood Identification**: Apply the criteria to identify at least two candidate neighborhoods across the state for future study.

c) **Neighborhood Monitoring and Evaluations**: Repeat tasks 3(a) through (d) in the supplemental test neighborhoods.

5. Health Evaluation Efforts

Objective: To review the information and methodologies available to evaluate neighborhood-scale cumulative impacts. Initiate research efforts to fill data gaps identified and health impact evaluations in neighborhoods slated for monitoring in fall 2000. These efforts will assist in developing and/or improving the models to be used in future analyses.

Tasks:

a) **MATES II Health Correlation**: Initiate efforts, either within ARB or through a contractor, to correlate MATES II air-monitoring data with available health data. Hospital admissions, mortality, or other readily available data sets would be acquired to investigate the association between ambient air quality and the incidence of adverse air pollution-related health events.

b) **Neighborhood Health Evaluations**: Explore options and the scale of effort required to conduct health/exposure evaluations in neighborhoods slated for monitoring in fall 2000. Initiate efforts to conduct studies that may provide useful information within 12-18 months.

c) **Cumulative Impact Indices**: Initiate efforts to correlate air quality monitoring data (e.g., criteria and toxic pollutant data from Barrio Logan and MATES II) with health data to develop cumulative exposure/impact indices that could eventually serve as a screening tool for evaluating neighborhood-scale impacts. Evaluate options and the feasibility of applying GIS-based analyses to estimate cumulative impacts. If feasible, initiate efforts to develop a protocol for applying those techniques.

d) **Identify Co-funding Sources**: Initiate efforts to contact other research funding groups to acquire additional funding for the activities.

6. Risk Reduction Strategies

Objective: Address, in the near-term, any significant high-exposure or high-risk situations that may be identified in the course of the NAP-related monitoring and modeling activities. Evaluate long-term approaches that ARB, local air districts, and other public agencies can employ to address neighborhood-scale impact issues.

Tasks:

a) **Near-term Risk Reduction**: As appropriate for any high-exposure/high-risk situations encountered during the monitoring and modeling efforts, work with the appropriate local, state, and federal agencies and affected stakeholders to identify and prioritize sources (stationary and mobile), evaluate applicable regulations, assess compliance status, and explore exposure/risk reduction options.

b) **Regulatory Framework**: In consultation with the stakeholder working group (task 6c), review the existing legal framework under which ARB, local air districts, and other public agencies can address neighborhood-scale impact issues in their regulatory and advisory programs. Consider the need for modifications to the existing framework, as supported by

data analyses, regulatory paradigms, and the public participation process.

c) **Long-term Risk Reduction Strategies**: Establish a stakeholder working group that will evaluate and recommend strategies to reduce emissions for minimizing the risk posed by multiple air pollution sources at the neighborhood-scale. The strategies would include mitigation approaches and mechanisms to incorporate cumulative assessments into the future decision-making process as well as make recommendations on policy options for future consideration. The group's purview would cover strategies feasible within the existing legal and regulatory framework and changes needed to the existing framework. Membership will include representatives from environmental and community groups, industry, local air districts, and other agencies/institutions having a role at the local level.

7. Evaluation Guidelines

Objective: To develop guidelines, including technical protocols and methodologies, and definitions of key terms that may be used to develop a consistent, scientifically justifiable basis for determining whether the cumulative risk posed by air pollutants at the neighborhood-scale is unusually high for the neighborhood or community in question.

Tasks:

a) **Develop Guidelines**: Develop guidelines for conducting neighborhood impacts assessments and evaluating policy options for managing high-risk situations encountered during the NAP field studies. This includes monitoring, emission inventory, modeling and data analyses, review of relevant regulatory rules, practices, policies and determinations, and risk reduction protocols.

b) **Peer Review and Stakeholder Outreach**: Identify peers from academia, local and federal agencies, and other state agencies and solicit their input and comment on the guidelines. Brief all stakeholders on the guidelines and solicit their comments. Hold public workshops.

c) **Board Action**: Present the guidelines to the Board for consideration by summer 2002.

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